

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) An electronic circuit for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the circuit comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a first electrical signal on one of the second pair of conductors; and

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a second electrical signal on the other of the second pair of conductors,

the first and second electrical signal together constituting a loop back of the differential mode signal and wherein the first steering circuit and the second steering circuit are respectively combined to generate the first electrical signal and the second electrical signal using a signal level power of the received differential mode signal.

2. (Currently amended) An electronic circuit for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the circuit comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors; and

circuitry responsive to application of a DC voltage level and configured to disable ~~disabling~~ the first steering circuit.

3. (Currently amended) A circuit in accordance with claim 2, further comprising:
circuitry responsive to application of the said DC voltage level and configured to disable
~~disabling~~ the second steering circuit.

4. (Currently amended) An electronic circuit for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the circuit comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors; and

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors; and

circuitry responsive to application of a DC voltage level and configured to distort
~~distorting~~ the differential mode signal prior to transmitting it on the second pair of conductors.

5. (Currently amended) An electronic circuit for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the circuit comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors; and

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors, the first steering circuit and the second steering circuit are respectively combined to generate the first electrical signal and the second electrical signal using a signal level power of the received differential mode signal;

and wherein said first steering circuit includes ~~comprises~~ an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

6. (Currently amended) A circuit in accordance with claim 5, wherein the said second steering circuit comprises an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.
7. (Currently amended) A circuit in accordance with claim 6, further comprising:
circuitry responsive to application of a DC voltage level, the circuitry configured to disable ~~disabling~~ the first steering circuit.
8. (Currently amended) A circuit in accordance with claim 7, further comprising:
circuitry responsive to application of the said DC voltage level and configured to disable ~~disabling~~ the second steering circuit.
9. (Currently amended) A circuit in accordance with claim 6, further comprising:
circuitry responsive to application of a DC voltage level and configured to distort ~~distorting~~ the differential mode signal prior to transmitting it on the second pair of conductors.
10. (Currently amended) An electronic circuit for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the circuit comprising:
a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors; and
a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors,
wherein the said first steering circuit includes ~~comprises~~:
a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

11. (Currently amended) A circuit in accordance with claim 10, wherein the said second steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

12. (Currently amended) A circuit in accordance with claim 11, further comprising:
circuitry responsive to application of a DC voltage level and configured to disable ~~disabling~~ the first steering circuit.

13. (Currently amended) A circuit in accordance with claim 12, further comprising:
circuitry responsive to application of the said DC voltage level and configured to disable ~~disabling~~ the second steering circuit.

14. (Currently amended) A circuit in accordance with claim 11, further comprising:
circuitry responsive to application of a DC voltage level and configured to distort ~~distorting~~ the differential mode signal prior to transmitting it on the second pair of conductors.

15. (Currently amended) An electronic circuit for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the circuit comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors, the second steering circuit configured to generate the electrical signal on each of the second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors;

a current mirror associated with the said first steering circuit;

a voltage storage device coupled to the said current mirror; and

a switch controlled by a voltage stored on the said voltage storage device, the said switch coupled to the said second steering circuit and configured to alter ~~for altering~~ operation of the said second steering circuit in response to the voltage stored on the said voltage storage device.

16. (Currently amended) An electronic circuit for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the circuit comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors, the second steering circuit configured to generate the electrical signal on each of the second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors;

a current mirror associated with the said first steering circuit;

a voltage storage device coupled to the said current mirror; and

a switch controlled by a voltage stored on the said voltage storage device, the said switch coupled to the said first steering circuit and configured to alter ~~for altering~~ operations of the said first steering circuit in response to the voltage stored on the said voltage storage device.

17. (Currently amended) A circuit in accordance with claim 15, wherein the said first steering circuit ~~comprises~~ includes:

an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

18. (Currently amended) A circuit in accordance with claim 16, wherein the said first steering circuit ~~comprises~~ includes:

an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

19. (Currently amended) A circuit in accordance with claim 17, wherein the said second steering circuit comprises an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

20. (Currently amended) A circuit in accordance with claim 18, wherein the said second steering circuit comprises an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

21. (Currently amended) A circuit in accordance with claim 15, wherein the said first steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

22. (Currently amended) A circuit in accordance with claim 16, wherein the said first ~~steering~~ steering-circuit comprises includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

23. (Currently amended) A circuit in accordance with claim 21, wherein the said second steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

24. (Currently amended) A circuit in accordance with claim 22, wherein the said second steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

25. (Currently amended) A method for controlling the loop back of a differential mode signal received at a network device on a first pair of conductors and transmitted from the network device on a second pair of conductors, the method comprising:

receiving the differential mode signal;

applying the differential mode signal to a first steering circuit and a second steering circuit;

generating a first electrical signal to be transmitted on a first one of the second pair of conductors with the said first steering circuit; and

generating a second electrical signal to be transmitted on a second one of the second pair of conductors with the said second steering circuit,

the first and second electrical signals together constituting a loop back of the differential mode signal, the first electrical signal and the second electrical signal being generated using a signal level power of the received differential mode signal.

26. (Currently amended) A method for controlling the loop back of a differential mode signal received at a network device on a first pair of conductors and transmitted from the network device on a second pair of conductors, the method comprising:

receiving the differential mode signal;

applying the differential mode signal to a first steering circuit and a second steering circuit;

generating a first signal to be transmitted on a first one of the second pair of conductors with the said first steering circuit;

generating a second signal to be transmitted on a second one of the second pair of conductors with the said second steering circuit; and

transmitting the said first and second signals on the second pair of conductors.

27. (Currently amended) A method in accordance with claim 26, further comprising:

receiving at the network device a power signal; and

disabling at least one of the said first steering circuit and the said second steering circuit in response to receipt of the said power signal.

28. (Currently amended) A method in accordance with claim 26, further comprising:
receiving at the network device a power signal; and
distorting at least one of the said first signal and the said second signal in response to receipt of the said power signal.
29. (Currently amended) A method in accordance with claim 26, further comprising:
mirroring current from at least one of the said first steering circuit and the said second steering circuit;
rectifying the said mirrored current;
applying the said rectified current to a voltage storage device;
using the said voltage storage device to control at least one switch; and
disabling at least one of the said first steering circuit and the said second steering circuit with the said at least one switch.
30. (Currently amended) A method in accordance with claim 26, further comprising:
mirroring current from at least one of the said first steering circuit and the said second steering circuit;
rectifying the said mirrored current;
applying the said rectified current to a voltage storage device;
using the said voltage storage device to control at least one switch; and
distorting at least one of the said first signal and the said second signal with the said at least one switch.
31. (Currently amended) An apparatus for controlling the loop back of a differential mode signal received at a network device on a first pair of conductors and transmitted from the network device on a second pair of conductors, the apparatus comprising:
means for receiving the differential mode signal;
means for applying the differential mode signal to a first steering circuit and a second steering circuit;

means for generating a first electrical signal to be transmitted on a first one of the second pair of conductors with the said first steering circuit; and

means for generating a second electrical signal to be transmitted on a second one of the second pair of conductors with the said second steering circuit,

the first and second electrical signal together constituting a loop back of the differential mode signal, the first electrical signal and the second electrical signal generated using a signal level power of the received differential mode signal.

32. (Currently amended) An apparatus for controlling the loop back of a differential mode signal received at a network device on a first pair of conductors and transmitted from the network device on a second pair of conductors, the apparatus comprising:

means for receiving the differential mode signal;

means for applying the differential mode signal to a first steering circuit and a second steering circuit;

means for generating a first signal to be transmitted on a first one of the second pair of conductors with the said first steering circuit;

means for generating a second signal to be transmitted on a second one of the second pair of conductors with the said second steering circuit, the first electrical signal and the second electrical signal generated using a signal level power of the received differential mode signal; and

means for transmitting the said first and second signals on the second pair of conductors.

33. (Currently amended) An apparatus in accordance with claim 32, further comprising:

means for receiving at the network device a power signal; and

means for disabling at least one of the said first steering circuit and said second steering circuit in response to receipt of the said power signal.

34. (Currently amended) An apparatus in accordance with claim 32, further comprising:

means for receiving at the network device a power signal; and

means for distorting at least one of the said first signal and the said second signal in response to receipt of the said power signal.

35. (Currently amended) An apparatus in accordance with claim 32, further comprising:
means for mirroring current from at least one of the said first steering circuit and the said second steering circuit;
means for rectifying the said mirrored current;
means for applying the said rectified current to a voltage storage device;
means for using the said voltage storage device to control at least one switch; and
means for disabling at least one of the said first steering circuit and the said second steering circuit with said at least one switch.
36. (Currently amended) An apparatus in accordance with claim 32, further comprising:
means for mirroring current from at least one of the said first steering circuit and the said second steering circuit;
means for rectifying the said mirrored current;
means for applying the said rectified current to a voltage storage device;
means for using the said voltage storage device to control at least one switch; and
means for distorting at least one of the said first signal and the said second signal with said at least one switch.
37. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the telephone including an apparatus for controlling the loop back of a differential mode signal received at the telephone on a first pair of conductors and transmitted from the telephone on a second pair of conductors, the apparatus comprising:
means for receiving the differential mode signal;
means for applying the differential mode signal to a first steering circuit and a second steering circuit;
means for generating a first electrical signal to be transmitted on a first one of the second pair of conductors with the said first steering circuit; and
means for generating a second electrical signal to be transmitted on a second one of the second pair of conductors with the said second steering circuit,

the first and second electrical signal together constituting a loop back of the differential mode signal, the first electrical signal and the second electrical signal generated using a signal level power of the received differential mode signal.

38. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the telephone including an apparatus for controlling the loop back of a differential mode signal received at the telephone on a first pair of conductors and transmitted from the telephone on a second pair of conductors, the apparatus comprising:

means for receiving the differential mode signal;

means for applying the differential mode signal to a first steering circuit and a second steering circuit;

means for generating a first signal to be transmitted on a first one of the second pair of conductors with the said first steering circuit;

means for generating a second signal to be transmitted on a second one of the second pair of conductors with the said second steering circuit, the first electrical signal and the second electrical signal generated using a signal level power of the received differential mode signal; and

means for transmitting the said first and second signals on the second pair of conductors.

39. (Currently amended) A system in accordance with claim 38, wherein the apparatus further comprises:

means for receiving at the telephone a power signal; and

means for disabling at least one of the said first steering circuit and the said second steering circuit in response to receipt of the said power signal.

40. (Currently amended) A system in accordance with claim 38, wherein the apparatus further comprises:

means for receiving at the telephone a power signal; and

means for distorting at least one of the said first signal and the said second signal in response to receipt of the said power signal.

41. (Currently amended) A system in accordance with claim 38, wherein the apparatus further comprises:

means for mirroring current from at least one of the said first steering circuit and the said second steering circuit;

means for rectifying the said mirrored current;

means for applying the said rectified current to a voltage storage device;

means for using the said voltage storage device to control at least one switch; and

means for disabling at least one of the said first steering circuit and said second steering circuit with said at least one switch.

42. (Currently amended) A system in accordance with claim 38, wherein the apparatus further comprises:

means for mirroring current from at least one of the said first steering circuit and the said second steering circuit;

means for rectifying the said mirrored current;

means for applying the said rectified current to a voltage storage device;

means for using the said voltage storage device to control at least one switch; and

means for distorting at least one of the said first signal and said second signal with said at least one switch.

43. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the voice over IP telephone device for receiving a differential mode signal on a first pair of conductors and transmitting a loop back signal on a second pair of conductors, the device comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a first electrical signal on one of the second pair of conductors; and

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a second electrical signal on the other of the second pair of conductors,

the first and second electrical signals together constituting a loop back of the differential mode signal, the first electrical signal and the second electrical signal generated using a signal level power of the received differential mode signal.

44. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the voice over IP telephone device for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the device comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors the second steering circuit configured to generate the electrical signal on each of the second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors; and

circuitry responsive to application of a DC voltage level disabling the first steering circuit.

45. (Currently amended) A system in accordance with claim 44, wherein the said device further comprises:

circuitry responsive to application of said DC voltage level disabling the second steering circuit.

46. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the voice over IP telephone device for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the device comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors the second steering circuit configured to generate the electrical signal on each of the second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors; and

circuitry responsive to application of a DC voltage level distorting the differential mode signal prior to transmitting it on the second pair of conductors.

47. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the voice over IP telephone device for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the device comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors the second steering circuit configured to generate the electrical signal on each of the second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors; and

an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

48. (Currently amended) A system in accordance with claim 47 wherein the said second steering circuit comprises an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

49. (Currently amended) A system in accordance with claim 48, wherein the said device further comprises:

circuitry responsive to application of a DC voltage level disabling the first steering circuit.

50. (Currently amended) A system in accordance with claim 49, wherein the said device further comprises:

circuitry responsive to application of the said DC voltage level disabling the second steering circuit.

51. (Currently amended) A system in accordance with claim 48, wherein the said device further comprises:

circuitry responsive to application of a DC voltage level distorting the differential mode signal prior to transmitting it on the second pair of conductors.

52. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the voice over IP telephone device for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the device comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors; and

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors the second steering circuit configured to generate the electrical signal on each of the second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors;

wherein the said first steering circuit ~~comprises~~ includes

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

53. (Currently amended) A system in accordance with claim 52 wherein the said second steering circuit ~~comprises~~ includes

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

54. (Currently amended) A system in accordance with claim 53, wherein the said device further comprises:

circuitry responsive to application of a DC voltage level disabling the first steering circuit.

55. (Currently amended) A system in accordance with claim 54, wherein the said device further comprises:

circuitry responsive to application of the said DC voltage level disabling the second steering circuit.

56. (Currently amended) A system in accordance with claim 53, wherein the said device further comprises:

circuitry responsive to application of a DC voltage level distorting the differential mode signal prior to transmitting it on the second pair of conductors.

57. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the voice over IP telephone device for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the device comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate ~~for generating~~ a signal on the other of the second pair of conductors, the second steering circuit configured to generate the electrical signal on each of the

second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors;

a current mirror associated with the said first steering circuit;

a voltage storage device coupled to the said current mirror; and

a switch controlled by a voltage stored on the said voltage storage device, the said switch coupled to the said second steering circuit for altering operation of the said second steering circuit in response to the voltage stored on the said voltage storage device.

58. (Currently amended) A system including a voice over IP telephone switch and at least one voice over IP telephone, the voice over IP telephone device for receiving a differential mode signal on a first pair of conductors and transmitting a signal on a second pair of conductors, the device comprising:

a first steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate for generating a signal on one of the second pair of conductors;

a second steering circuit responsive to the differential mode signal on the first pair of conductors and configured to generate for generating a signal on the other of the second pair of conductors, the second steering circuit configured to generate the electrical signal on each of the second pair of conductors with a signal level power of the differential mode signal received on the first pair of conductors;

a current mirror associated with the said first steering circuit;

a voltage storage device coupled to the said current mirror; and

a switch controlled by a voltage stored on the said voltage storage device, the said switch coupled to the said first steering circuit for altering operations of the said first steering circuit in response to the voltage stored on the said voltage storage device.

59. (Currently amended) A system in accordance with claim 57 wherein the said first steering circuit ~~comprises~~ includes:

an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

60. (Currently amended) A system in accordance with claim 58 wherein the said first steering circuit ~~comprises~~ includes:

an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

61. (Currently amended) A system in accordance with claim 59 wherein the said second steering circuit comprises an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

62. (Currently amended) A system in accordance with claim 60 wherein the said second steering circuit comprises an NPN bipolar transistor and a PNP bipolar transistor having their respective emitters and collectors mutually coupled.

63. (Currently amended) A system in accordance with claim 57 wherein the said first steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

64. (Currently amended) A system in accordance with claim 58 wherein the said first steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

65. (Currently amended) A system in accordance with claim 63 wherein the said second steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.

66. (Currently amended) A system in accordance with claim 64 wherein the said second steering circuit ~~comprises~~ includes:

a P-channel MOSFET and an N-channel MOSFET having their respective drains and sources mutually coupled.